Remarks/Arguments:

The present invention relates to improving the overall efficiencies of various aspects of a wood fiber pulping process by removing all or a portion of high molecular weight organic by-products from washing fluids to increase concentration gradients for mass transfer.

In one aspect the present invention relates to a method for improving the efficiency of a wood pulping process using a displacement batch digester that uses untreated pulp washing fluid to displace hot black liquor from the digester to an accumulator. In this aspect the untreated pulp washing fluid is subjected to removal of high molecular weight organic by-products from the washing fluid prior to the washing fluid being used to displace the hot black liquor (claim 18).

In a second aspect the present invention is a method for improving the efficiency of a wood pulping process incorporating dilution of pulp by removing high molecular weight by-products from a filtrate taken from any washing step of the process and using the treated filtrate in any dilution zone, pipe or equipment in the pulping process to dilute the pulp (claim 21).

Another aspect of the present invention is a method for improving the efficiency of wood pulping process employing a multi-stage washing process wherein a washing liquid is separated from the wash fibers in one of a last stage or any stage except the first stage of the multi-stage washing process, the separated washing fluid being treated to remove high molecular weight organic by-products to produce a washing liquid having a reduced quantity of high molecular weight organic by-products so that the cleaned or treated washing liquid can be used in any other stage of the multi-stage washing process (claim 22).

In yet another aspect of the present invention is the method for improving the efficiency of a wood pulping process using an oxygen delignification stage which is proceeded by and followed by washing of the pulp by separating washing fluid from the pulp after any one of the washing steps proceeding or any one of the washing steps following the oxygen delignification step and separating high molecular weight organic by-products from the washing fluid to produce a cleaned washing fluid with increased concentration gradients for mass transfer and using the cleaned washing fluid in any one of any washing operation or to dilute pulp prior to, after, or during oxygen delignification (claim 23).

The Examiner has rejected claim 23 under 35 U.S.C. § 103(a) over Samuelson U.S. Patent 3,853,473. Contrary to the allegation of the Examiner it is respectfully submitted that Samuelson et al. were concerned with the washing of pulp before and after an oxygen bleaching stage not an oxygen delignification stage. Bleaching happens after the pulp has been treated to separate the align to liberate the fibers which then can be bleached.

Samuelson et al. neither teach nor suggest subjecting the fluid to filtration to remove high molecular weight organic by-products from the washing fluid to thus produce a cleaned washing fluid with increased concentration gradients for mass transfer.

Applicant submits the Examiner is using his teaching to not only select, but to interpret the prior art which is clearly contrary to existing patent law. Applicant further submits that the rejection of claim 23 under 35 U.S.C. § 103(a) is not well taken and should be withdrawn.

The Examiner has rejected claim 21 under 35 U.S.C. § 103(a) over Samuelson further in view of Thorsell et al. U.S. Patent 4,670,098. For the reasons set forth above it is respectfully submitted that Samuelson et al. do not teach or suggest the use of a filtrate treated to remove high molecular weight organic by-products to yield a treated filtrate with lower concentration of colloidal and/or high molecular weight organic by-products to increase concentration gradients for mass transfer and using the treated filtrate in a dilution zone, pipe or equipment in the pulping process to dilute pulp. Thorsell et al. show no use of ultra-filtration in the brown stock washing and oxygen delignification process areas of a pulp mill as they have in the cooking area of the pulp mill. Thorsell et al. are only concerned or familiar with the cooking process and fail to appreciate, teach or suggest the benefit or ultra-filtration in other areas of a pulp mill. Applicant submits that if Thorsell et al. knew the benefit of ultra-filtration in the other areas of a pulp mill they surely would have disclosed and claimed such processes.

Furthermore, Thorsell et al. disclose a process for removing metal ions with magnesium by either the physical adsorption, or the chemical process of absorption, which process favored by Thorsell et al. is not exactly stated.

It is respectfully submitted that the Examiner has fallen into the trap of using applicant's own teaching to not only select but to interpret the reference. This is clearly contrary to existing Patent Law.

Therefore it is respectfully submitted that the rejection of claim 21 under 35 U.S.C. § 103(a) is not well taken and should be withdrawn.

The Examiner has rejected claim 22 under 35 U.S.C. § 103(a) over Samuelson, and further in view of Davies et al. U.S. Patent 5,127,992.

For the reasons stated above it is respectfully submitted that the Samuelson teaching is fatally defective and thus neither teaches nor suggests applicants invention. The failure of Samuelson et al. is not filled in by Davies et al. Davies et al. disclose a process for removing a material from a bleach plant effluent. Davies et al. accomplishes this by adjusting the pH of the effluent and "salting" the ions of the effluent to further precipitate them. This is a pollution control application for bleach plant effluent and not a modification of the internal processes of the bleach plant to create process optimization. Although Davies et al., in passing, mention filtering bleach plant effluent, they neither teach nor suggest the process disclosed by applicant.

Here again, it is respectfully submitted that the Examiner has fallen into the trap of using applicant's own teaching to not only select but to interpret the reference.

It is respectfully submitted that the rejection of claim 22 under 35 U.S.C. § 103(a) is not well taken and should be withdrawn.

The Examiner has rejected claim 18 under 35 U.S.C. § 103(a) as being unpatentable over Samuelson in view of Thorsell further in view of Elton U.S. Patent 4,806,203.

For the reasons set forth above it is submitted that Samuelson et al. is fatally defective. The failings of Samuelson et al. are not completed by Thorsell et al. or Elton. For the reasons set forth above the use of filtration in other parts of a pulp mill operation were totally unknown (apparently) through Thorsell et al. as not having been either taught or suggested by Thorsell et al. Elton et al. is attempting to accomplish the same results of the present invention by

using a different method. Elton et al. is trying to lower the dissolved solids by dilution with fresh alkali or by heating some of the liquor in the digester to condense the dissolved solids through agglomeration. The phrase wash liquid in Elton refers to the alkali that he is using to dilute the liquors using his process and not the showers on a device such as a washer. Elton fails to teach or suggest the removal of high molecular weight organic by-products using filtration so that the efficiency of a displacement batch digester can be improved. Here again the Examiner is using applicant's teaching to not only select but to interpret the references.

It is respectfully submitted that the rejection of claim 18 under 35 U.S.C. § 103(a) is not well taken and should be withdrawn.

Applicant wishes to point out that the summary page of the Office Action referred to the application as containing claims 19-23 whereas the application contains claims 18 through 23.

Applicant has added dependent claims 24 through 27 each dependent upon a remaining independent claim in the case and each adding the further limitation of using membrane separation to effect separation of the high molecular weight organic by-products from the liquid withdrawn from the respective stage of the wood pulping process.

Applicant can not too strongly suggest the Examiner has fallen into the trap of using applicant's teaching to not only select but to interpret the references.

In view of the foregoing amendments and arguments it is respectfully submitted that the application is in condition for allowance and a notice to that effect is earnestly solicited.

Respectfully submitted,

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